

## CLOSURE PLAN

### A. Objective

To describe a program for closing of the hazardous waste management facilities.

To dispose all hazardous waste in storage off-site.

To clean and decontaminate all storage tanks.

To eliminate any significant threat to human health and the environment from the facility to be closed.

### B. Procedure

#### 1. Wastewater Tank

a.) This tank of 22,000 gallon capacity, normally holds contaminated water from all sources within the plant.

b.) At closure, any remaining wastewater will be pumped out.

The tank would be rinsed three times, each time circulating 500 gallons of water, from the bottom of the tank back through a spray head in the top using a pump. Rinses will be accumulated in a "wastewater" tank truck for off-site disposal.

Estimated Manpower:	2 Operators, 2 Shifts
Estimated Material:	1500 gallons water
Supplementary Facilities:	4 "wastewater" tank trucks
Disposal of Wastewater:	Approved Waste Management Service (incinerator) - (e.g. Stauffer Chemical Company, Baytown.)

#### 2. Drum Storage Area

a.) In the drum storage area there would be stored, under "worst case" conditions:

50 Used Absorbent  
30 Used rags and gloves  
10 Semi-dried solids from intermediate  
tanks  
5 Filter bags  
3 Used empty chemical bottles  
12 Used column packing  
10 Dried solids from still  
20 Semi-dried solids from still  
30 Truck heels

b.) At closure these drums would be removed by contractor  
for off-site disposal. Drum storage area would be  
cleaned by removal of any spill hazardous waste.

Estimated Manpower:	2 Operators, 2 Shifts
Supplementary Facilities:	Trailer to remove drums
Supplementary Service:	Fork lift and operator
Disposal of Drums:	Approved Waste Management Service (e.g. Rollins En- vironmental Service, Inc.)

### 3. Used Solvent Tanks

a.) Two used solvent tanks; 6,000 (T-131) and 1,000 (T-141),  
are provided to hold used solvents (EPA Hazardous  
Waste No. F001, F002). All used solvent tanks will  
hold 7,000 gallons of used solvent.

b.) At closure, the contents of the tanks will be pumped  
out to a tank truck for off-site disposal. Thereafter,  
the tanks will be rinsed out three times using 100-200  
gallons increments of solvent (e.g. perchloroethylene)  
depending upon tank size pumped in at the top through  
a spray head, and drained out of the bottom circulating  
the solvent at least one and a half (1.5) hours.  
Rinses will be accumulated in a tank truck for off-  
site disposal.

Estimated Manpower:	2 Operators, 1 Shifts
Estimated Material:	1200 gallons solvent
Supplementary Facilities:	2 "Used Solvent" tank trucks
Disposal of Spent Solvents:	Approved Waste Management Service (e.g. Eltex Chemical and Supply Co.)

#### 4. Spent Acid Tank

- a.) This tank, of 11,000 gallon capacity, normally holds spent sulfuric acid from the treatment of off-spec solvent.
- b.) At closure, any "spent sulfuric acid" will be pumped out to a tank truck. Thereafter, the tank will be rinsed with water and soda ash until the pH stabilizes at 6. The rinses will be collected in a tank truck for off-site disposal.

Estimated Manpower:	2 Operators, 2 Shifts
Estimated Material:	3 bags of soda ash, 1500 gal. water
Supplementary Facilities:	4 "Spent Acid" tank trucks and 1 "Wastewater" tank truck
Disposal of Spent Acid:	Regeneration acid plant (e.g. Stauffer Chemical Company, Baytown)
Disposal of Wastewater:	Approved Waste Management Service (e.g. Stauffer Chemical Company, Baytown)

#### C. Schedule

Presume a 2-man crew with supporting equipment including:

Tank cleaner spray head  
Wrenches, saws, personal protective gear  
Fork lift and operator  
8 Tank trucks  
1 Trailer for removing drums

- Day 1: Pump out "wastewater" tank to trucks and remove for off-site disposal. Remove 1 truck load of drums
- Day 2: Clean tank and rinse; load and remove balance of drums.
- Day 3: Clean drum storage area. Pump out "used solvents" to trucks and remove for off-site disposal.
- Day 4: Pump out "used solvent" to trucks and remove for off-site disposal. Clean "used solvent" tank and rinse.

Day 5: Clean "used solvent" tank and rinse.

Day 6: Pump out "spent acid" to truck and remove for off-site disposal. Clean "spent acid" tank and rinse.

Day 7: Contingency Day

D. Cost Estimate

1. General

- a. Unit costs designated apply to partial truck loads.
- b. Cost of one operator with hand tools/shift: \$144.00.
- c. Cost of wastewater disposal: \$0.32/gal. including transportation.
- d. Drum disposal charge relative to type of waste.  
Cost of transportation: \$0.80/cwt.
- e. Cost of used solvents for recycling: \$0.25/gal. including transportation.
- f. Cost of spent sulfuric acid for regeneration: no charge. Cost of transportation: \$0.42/cwt.
- g. Fork lift and operator: \$200.00/day.  
Fork lift delivery and pick-up: \$75.00.
- h. Contingency 3%.

2. Breakdown

14 man days @ 144	\$ 2,016.00
Forklift 2 days @ 200	
(Delivery and Pick-up) 75	475.00
Wastewater Disposal	
22,000 + 1,500 + 1,500 = 25,000	
@ 0.32	8,000.00
Used Solvent for Recovery	
8,000 + 1,200 = 9,200	
@ 0.25	2,050.00
Spent Sulfuric Acid for Regeneration	
(Transportation Only) 4 trucks	
42,000 lbs/truck @ 0.42/cwt	705.60
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	\$13,246.60

# Drum Disposal

Used Absorbent - 50 drums @ \$54/ea.	\$ 2,700.00
Used Rags & Gloves - 30 drums @ \$34/ea.	1,020.00
Semi-Dried Solids from Tanks - 10 drums @ \$110./ea.	1,100.00
Filter Bags - 5 drums @ \$40/ea.	200.00
Used Empty Chemical Bottles - 12 drums @ \$50/ea.	600.00
Used Column Packing - 10 drums @ \$50/ea.	500.00
Dried Solids from Still - 20 drums @ \$50/ea.	1,000.00
Semi-Dried Solids from Still - 30 drums @ \$50/ea.	1,500.00
Truck Heels - 30 drums @ \$110./ea.	3,300.00
Transportation: 95,240 lbs. @ \$0.80/cwt	763.00

\$12,682.00

Tool rentals, supplies, personal protective equipment

6,000.00

6,000.00

\$31,928.60

Contingency

9,578.58

TOTAL

\$41,507.18

## V. Completion

When all steps in Section B are completed all wastes are removed, and the area is clean, a licensed professional engineer will inspect the site. Upon verification of this individual, the site would be declared closed. The professional engineer will then certify that closure was done according to the requirements of our closure plan.

LMB:MB

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